

# इंटरनेट

# मानक

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IS 10199 (1982): Acceptance tests and trials for fishing vessels [TED 18: Inland, Harbour Crafts and Fishing Vessels]



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*Indian Standard*

ACCEPTANCE TESTS AND TRIALS FOR  
FISHING VESSELS

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## ACCEPTANCE TESTS AND TRIALS FOR FISHING VESSELS

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# *Indian Standard*

## **ACCEPTANCE TESTS AND TRIALS FOR FISHING VESSELS**

### **0. FOREWORD**

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 30 June 1982, after the draft finalized by the Fishing Vessels Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

**0.2** Tests and trials to ensure operational efficacy of the finishing vessels are very important before the same are accepted by their owners. The users of this standard are required to ensure compliance with Statutory Authorities/Classification Societies, where applicable.

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### **1. SCOPE**

**1.1** This standard covers tests and trials for fishing vessels of 15 m length overall ( L.O.A. ) and above to ensure their operational efficacy and their acceptance by the owners.

**1.2** It may be used as a guideline for vessels below 15 m length overall.

### **2. REQUIREMENTS**

**2.0** The following tests and trials shall be undertaken before any fishing vessel is accepted for operation:

- a) Tank model tests,
- b) Shop test,
- c) Floating trials,
- d) Bollard pull test,
- e) Stability test,
- f) Sea trials,
- g) Speed trials, and
- h) Fishing trials.

**2.1** Tank model test is normally carried out to determine resistance and propulsion characteristics of the vessel, where adequate data on past vessel is not available. This test shall be undertaken for the first of any new design, if mutually agreed to between the shipbuilder and the owner.

**2.2** The shop test shall be carried out at the place of manufacture for all main and auxiliary machinery to the satisfaction of Statutory Authority/Classification Society, as applicable. The tests for marine diesel engines shall be carried out in accordance with IS : 8013-1976\*. For other machinery the test shall be carried out in accordance with relevant Indian Standards, where applicable.

**2.3 Floating Trials** — All equipment shall be run individually and collectively for specified period and performance. The equipment and machinery shall be tested in presence of inspecting authority/owner's representative. The tests shall include the following items:

- a) Main engine in accordance with IS : 8013-1976\*;
- b) Auxiliary engine;
- c) All pumps ( bilge, fire fighting, fuel, etc );
- d) Mechanical ventilation system;
- e) Refrigeration and air-conditioning system;
- f) Electrical machinery and switch gears;
- g) Masts/boom/derricks and all load handling tackles ( mooring equipment ) to be subjected to load test to ensure safety. These tests shall be supported by issuance of necessary certificates.

**2.3.1** The calculated tank capacity curves against sounding depths shall be duly certified.

**2.3.2** Inspection of equipment and instrument shall be in accordance with the agreement between the builder and the owner.

**2.4 Bollard Pull Test** — Bollard pull tests are important especially in the case of trawlers, as the capability of the vessel to tow the fishing gear determines its capability to undertake bottom trawling and mid water/pelagic trawling.

**2.4.1** The bollard pull test shall be carried out under the following conditions:

- a) Vessels' displacement to full ballast and full fuel capacity;
- b) Vessel trimmed at even keel or at a trim by the stern not exceeding 1 percent of the vessels' length;

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\*Guide for selection and testing of marine diesel engines for fishing vessels.



- c) Wind speed not exceeding 5 m/sec;
- d) The water current at the test location not exceeding one knot in any direction;
- e) As the propeller efficiency depends on adequate water depth, the optimum depth of water at the test location should be 8 times the draught of the vessel; and
- f) The main engine(s) to run at the manufacturers' recommended maximum continuous output.

**2.4.2** The static bollard pull developed by the fishing vessel shall be measured by an approved tension measuring device ( strain cell, dynamometer ), connected between the shore bollard and the vessel. Engine rpm shall be gradually increased to its maximum value. The value certified as the vessels' continuous bollard pull shall be the pull recorded as being maintained without any tendency to decline for a duration of not less than five minutes.

In case adequate depth of water is not available at the test location, the bollard pull as recorded may be suitably corrected to arrive at the rated bollard pull.

**2.4.3** Working of the transmission gear shall be watched during the bollard pull test for signs of failure.

**2.5 Inclining Tests** — Inclining experiment shall be undertaken to determine initial stability before proceeding to sea.

**2.5.1** The trim and stability calculations for the following loading conditions shall be submitted to owners:

- a) Lightship condition;
- b) Vessel ready to sail with full fuel oil, stores, fresh water, ice, fishing gear, etc;
- c) Departure from fishing grounds with full catch;
- d) Arrival at port with 10 percent of fuel and consumables and full catch; and
- e) Arrival at port with 10 percent of fuel and consumables and 20 percent of full catch.

**NOTE** — The compliance to requirements of Torremelinos convention, shall be ensured, where applicable.

## 2.6 Sea Trials

**2.6.1** After successful completion of deck trials the ship will be taken out for sea trials to try out its main and auxiliary machinery, in relation to the type of the hull and the stern gear installed.

**2.6.1.1** Main engines' trials will consist of following:

$\frac{1}{2}$  hour at rpm corresponding to 50 percent MCR ( Maximum continuous rating ),

$\frac{1}{2}$  hour at rpm corresponding to 70 percent MCR,

$\frac{1}{2}$  hour at rpm corresponding to 90 percent MCR, and

4 hours at rpm corresponding to 100 percent MCR.

NOTE — This trial will apply to fishing vessels of 15 m length overall ( L.O.A. ) and above. For vessels of length less than 15 m, the engine power will be gradually built up and measurements recorded during a 4 hour run at rpm corresponding to 100 percent MCR.

Engine RPM will be adjusted to achieve above propeller absorptions. During above runs, engine parameters like specific fuel consumption lubricating oil pressure, cooling water temperature exhaust gas temperatures, charge air pressure, etc, shall be monitored continuously.

**2.6.1.2** Alongwith the main engine the behaviour of important components of the asters gear like marine gear box, shaft bearings, etc, shall be watched,

**2.6.1.3** The other machinery driven by the main engine like generators, hydraulic pumps shall be continuously watched.

**2.6.1.4** The auxiliary machinery shall be run continuously at full load under actual sea conditions to prove their reliability.

**2.6.2** *Manoeuvrability Test* — The manoeuvrability of the vessel shall be checked by conducting the following trials:

- a) **Turning Circle** — The vessel shall be turned to hard star-board and the time taken to make a full circle and the approximate diameter of the turning circle so made shall be recorded. The tests shall be repeated turning the vessel to hard port. The turning circle dia shall not exceed  $3.5 L$ , where  $L$  is the length of ship.

While describing the turning circle, the vessel shall be going full ahead, that is, the engine control shall be set at the position which gives 100 percent rpm on a straight run.

- b) **Crash Stop Ahead and Crash Stop Astern Test** — The ability of the vessel to come to a stop in case of emergency shall be tested by suddenly stopping the engine and then putting it to full astern.
- c) **Steering Gear** — The steering gear shall be checked for its reliability by recording the time taken to go from hard port to hard star-board and vice-versa while the ship is going full speed ahead. Likewise the steering gear shall also be tested while going astern.

Means shall be provided to operate the rudder directly by manual power in case of failure of the control mechanism of the steering gear.

## **2.7 Speed Trial**

**2.7.1** The vessel shall be subjected to the speed trials in a condition as close to that defined in **2.5.1(b)**.

**2.7.2** Speed of the vessel shall be taken across the available measured mile. Two double runs shall be carried out and speed worked out using mean of means method.

**2.7.3** Speed obtained above shall be corrected for shallow water effect by calculation if depth of water below the heel in trial condition is less than 10 times the draft of the vessel. The value so obtained shall be compared with the guaranteed value.

**2.8 Fishing Trials** — The fishing trials shall be carried out to ensure that the vessel has the capability to undertake the fishing operation for which it is designed.

**2.8.1** Actual fishing operations at least for a period of 2 hours shall be done. During the fishing operation all deck equipment shall be checked for their proper functioning. In the case of trawl winch, the average heaving speed is to be checked. The capacity to tow and heave up the fishing gear shall be verified by the normal working of the deck equipment and fittings. The smoothness of various operations like shooting and hauling up the fishing gear, lifting the cod-end into the vessel and emptying it shall be checked.

# INTERNATIONAL SYSTEM OF UNITS ( SI UNITS )

## Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>